

Independent Coal and Coke Company
Kenilworth Mine Workings
Kenilworth
Carbon County
Utah

HAER No. UT-31

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PHOTOGRAPHS

HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Rocky Mountain Regional Office
Department of the Interior
P.O. Box 25287
Denver, Colorado 80225

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HISTORIC AMERICAN ENGINEERING RECORD

INDEPENDENT COAL & COKE COMPANY
KENILWORTH MINE WORKINGS

UT-31

Location: Section 16, Township 13 South, Range 10 East
Carbon County, Utah

U.S.G.S. Quad: Helper, Utah

Dates of Construction: 1907-1931. The majority of the construction necessary to produce coal in large quantities was completed during this period. Alterations and improvements were made almost continually to the property between 1907 and 1931.

Present Owner: Price River Coal Company
Helper, Utah

Present Use: Not in use

Significance: The opening of the Kenilworth Mine in 1907 marked the beginning of the second phase of development in Utah's coal industry. The first phase was marked by a complete monopoly of the railroads over coal production, and the second phase was marked by the entrance of a number of local independent producers into the industry. The Independent Coal & Coke Company's mine was the first of the independents established.

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Cultural Resource Management Services
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Transmitted by: Jean P. Yearby, 1984

HISTORICAL CONTEXT

Coal mining has been integral to the industrial and commercial development of Utah since the first years of settlement. With sparse timber resources, early settlers quickly recognized the need to discover and develop alternate sources of energy for local consumption. Coal was discovered in 1849 near Coalville, Utah, about 40 miles east of Salt Lake City, and coal was delivered to the city by ox team for about \$40 until 1874, when the Union Pacific Railroad began a more extensive development of the Coalville field and delivered its product to Salt Lake by rail. Other early discoveries in widely-scattered locations throughout the state gave pioneers an indication of the extent of the state's coal resources. In 1854, two former Welsh coal miners discovered a coal bed in the central Utah county of Sanpete, and in 1852, in an attempt to produce locally-made iron, coal was sought and discovered in southern Utah, near Cedar City. The coal industry in these years reflected the subsistence nature of Utah's economy. All coal was produced and used locally. Production methods were primitive, and transportation to nearby communities was slow and costly (Arrington 1958).

As with many industries in the intermountain west, coal production changed radically with the coming of the railroad in 1869. The Union Pacific Railroad, builder of the first transcontinental line, needed vast quantities of coal for its operations. The railroad acquired and developed numerous coal mines near its right-of-way, including mines at Rock Springs, Wyoming; Gunnison, Colorado; and the mine at Coalville, Utah. The Union Pacific began development in Coalville in 1874 and, for the next ten years, virtually the only coal available in Salt Lake City came from this railroad. Several attempts were made by various Salt Lake business interests to break this monopoly, but none succeeded.

A second railroad, however, entered the coal industry in Utah. In 1882, the Denver & Rio Grande Western (D&RGW) completed its line over the Colorado Rockies and into Utah. Although originally planned to extend directly west through central Utah, the D&RGW changed the route in 1881 when surveyors reported the existence of large coal seams in Price River Canyon. The D&RGW line now turns north at Green River, Utah, goes over the Wasatch Plateau through Price River Canyon into Spanish Fork Canyon, then into Utah County and on to Salt Lake City. The D&RGW formed a subsidiary coal company, called the Utah Fuel Company, and immediately began opening coal mines in the fields of Carbon and Emery counties which eventually became the major source of coal in the state. By 1900, when Utah coal production first exceeded one million tons, Utah Fuel produced 90% of the coal in the state (Arrington 1958).

The D&RGW produced this coal from three major mines it purchased and developed in the years between 1882 and 1900: Winter Quarters Mine near Scofield (1882), the Castle Gate Mine three miles up Price Canyon near Helper (1888), and the Sunnyside Mine (1900). The Castle Gate Mine site was adjacent to the D&RGW rail line through the canyon and directly northwest of the location of the Kenilworth Mine (Alexander 1963).

Although a different railroad now produced Utah coal, the monopoly condition in the state persisted. Coal prices in Salt Lake were considered high by the standards of the surrounding western states, and there were repeated shortages in the state. Local Salt Lake businessmen such as Charles N. Strevell, Fred and Arthur Sweet, and Jesse Knight began prospecting in Carbon and Emery counties with the intention of competing with the D&RGW. The company responded with tactics which raised loud complaints from the local businessmen, who accused the railroad of having its "armed guards" drive the local prospectors from the "public domain" in Carbon County and later, after independents had begun production, of charging the independents more for transporting their coal to Salt Lake City. Various investigations by the Interstate Commerce Commission and the Utah state legislature continued for the next decade and, by the depression of the 1920s, Utah Fuel's share of coal production had been cut to less than 40% (Alexander 1963).

Kenilworth Mine - Initial Discovery

During the spring of 1904, Heber J. Stowell, a resident of Spring Glen (a town two miles south of Helper, Utah) was hunting wild horses in mountains above the present town of Kenilworth when he stumbled on an outcrop of coal. Stowell recovered a few chunks of the exposed vein and showed the samples to an acquaintance named W. H. Lawley of Price, Utah. The following year, the two men joined forces and began prospecting seriously in the area that was to eventually become the Kenilworth Mine.

In order to continue their work through the winter of 1905-06, the two men needed financial assistance. Their initial backers were James Wade of Price and Fred Sweet of Salt Lake City. Sweet was prominent among Salt Lake businessmen who were interested in breaking the D&RGW monopoly on Utah coal production. The prospecting was particularly dangerous because the coal generally became crawling along narrow ledges and across talus slopes. Eventually the two prospectors decided to open the vein in Bull Hollow on the northeast side of the mountain above Kenilworth, but this choice proved to be a bad one, and mining was discontinued in Bull Hollow for a number of years (Reynolds 1948).

Independent Coal & Coke Company, 1906-1910

By the fall of 1906, the prospect was ready for large commercial development. At this point, Sweet and Stowell sold their interest to Salt Lake City hardware magnate Charles N. Strevell. Strevell and several other businessmen incorporated the Independent Coal & Coke Company under the laws of Wyoming, with a capitalization of one million shares of common stock worth \$1 each. Strevell was named president of the new corporation, James J. Paterson, Vice President and Treasurer, and F. A. Druehl, Secretary (Higgins 1910).

The new company set about purchasing the adjacent lands, undertaking necessary construction and acquiring mining machinery. By 1910 Independent Coal & Coke owned 3,200 acres of land, which included property above the coal seam in

Section 8, 9, 16, 17 and 18, land for a company town for the miners in Section 16, a right-of-way for a rail line to the D&RGW main line near Helper and land along the Price River for a pumping station and coal washing plant (Figure 1).

Under its coal lands, Independent Coal & Coke found three workable seams - the Aberdeen,, the Royal Blue and the Kenilworth. The Aberdeen seam, the one lowest on the mountainside, had originally been worked by Stowell and Sweet in Bull Hollow. The Aberdeen seam has coal that is from 15 to 22 feet thick. The problem with most of the coal in Bull Hollow was that much of the first few hundred feet had caught fire and burned at one time, and much of the coal that could easily be mined had been reduced to clinkers. The company, however, found a portion of the Aberdeen seam about 750 feet up the cliffs directly north of the townsite of Kenilworth which had not been burned and from which marketable coal could be recovered immediately. The first opening for the mine, later known as the Aberdeen No. 1 Mine, was made at this point.

Once work began on the Aberdeen,, a second coal seam directly above it could be reached. The middle, or Royal Blue, seam averaged six to 10 feet in thickness, and was eventually mined through an opening far down the main shaft, or "slope," of the Aberdeen. The third, or upper, seam was called the Kenilworth, and it too was worked from an opening far down the main slope of the Aberdeen. The Kenilworth averaged 16 to 18 feet thick. The coal in these veins was all of a very high quality bituminous coal - low in ash, sulphur and moisture content, yet with a high BTU content (Doelling 1972).

Development work on the No. 1 mine opening in the Aberdeen started with the cutting of the main shaft, or slope, 3000 feet northwesterly into the seam. The slope was nine feet high and 12 feet wide, and followed the incline of the seam as it dipped downwards on a 9-degree slope. Fourteen "entries" were cut off the main slope, seven on each side. Rooms were cut from each of these entries. All mining was done by the room-and-pillar method. Because of the solid sandstone above and below the three seams, very little timbering was necessary to support the roof.

Coal from the Royal Blue and Kenilworth seams was transported to the main slope in the Aberdeen. In 1910 the slope connecting the Royal Blue began at Room 7 of the first left entry of the Aberdeen, exited the mountain west of the Aberdeen No. 1 opening and reentered the Royal Blue seam which lay directly above the Aberdeen seam about 60 feet. The main slope of the Royal Blue was sunk 1000 feet over an incline of approximately 9 percent. Four entries were made on each side of the main slope of the Royal Blue, and eventually a second slope was dug to further open the vein. Little work had been completed on the upper, or Kenilworth, vein by 1910, other than a few prospect holes completed in order to "prove up" on the company's claim.

Various strength steel rails were laid throughout the network of slopes, entries and rooms so that the coal could be hauled on tram cars to the surface. The company installed 25-lb. steel rails in the rooms, 40-lb. rails

in the entries and 50-lb. rails on the main slope. Horses were used to pull the tram cars out of the rooms into the entries, where they were placed on "partings," or side tracks, near the main slope and within easy distance of the haulage rope. Stationed at various places in the mine were Fairbanks-Morse portable hoists, used to draw coal from the partings to where it could be loaded onto the main hoist. One Fairbanks-Morse hoist was located at the sixth right entry and used to haul cars from the deep workings. A second Fairbanks-Morse hoist was located at the top of the Royal Blue seam. Cars were then lowered by gravity to the Aberdeen seam and kept at a parting in the first left entry until they could be connected to the main hoist. The main hoist was a "double-drum" Ottumwa hoist 12 by 14 feet connected to a one-inch cable. The Ottumwa hoist pulled the coal to the surface.

At the mouth of the mine, Independent Coal & Coke constructed a number of buildings to house the hoists, power supply, fan and water systems. Two 125-hp Kewanee boilers furnished steam power to the hoists, to the fan for the ventilation system, and to a Sullivan air compressor. The ventilation fan was manufactured by Eagle Iron Works. It had a 12-blade 16x5' fan with a capacity to move 75,000 cubic feet of air per minute. A water tank and distribution system were also constructed to improve safety in the mine. It was not until 1911, however, that the company installed a pump on the Price River, and during the early years, water had to be hauled by rail to the tippie and pumped to the tank at the mine opening. A 2-inch main ran down the Aberdeen's main slope from the water tank, and 1-1/2-inch line branched off into the various entries and rooms. The mine was sprinkled at least twice a week to keep the explosive coal dust from reaching critical levels, and the entire area was sprinkled before any dynamiting was done.

Coal was removed from the seam in two principal ways. During the initial phase, miners used Sullivan drills and coal cutters. They undercut a section of the working face with the cutters, making a 5-foot deep cut in the face. Explosives were then set and the coal blasted to the floor. Since the Aberdeen vein was 22 feet thick, coal was removed from the roof by drilling holes and again setting explosives.

Once the loaded cars left the mine, a Hendrie & Bolthoff hoist lowered them 1,200 feet along a single-track route known as the "Shelf Line" because it skirted the edge of steep cliffs. The Shelf Line ran east from the mine portal to an area known as the "Knuckle," where a set of double tracks ascended from the tippie area below. The tram cars were transferred to a huge hoist system powered by two gravity drum hoists manufactured by the Dillon Box Iron Works, each with a 50,000-lb. capacity. Each trip lowered 26 tons of coal to the tippie in about 75 seconds. An empty set of tram cars was hoisted to the Knuckle by the weight of the loaded cars going down. The gravity, or middle, tram line was laid with 75-lbs. steel rails. This tram line system included 193 cars by 1910, with that number rising substantially over the ensuing five years.

The first tipple built by the company was constructed of fir. Tram cars ran over the tope of the tipple where they were weighed, then a Phillips automatic cross-over dump emptied them onto a Jeffrey-type shaking screen manufactured by the C. S. Card Co. of Denver. The screens sized the coal to the various grades then popular on the market, including "lump," "stove," "egg and nut," and "slack." The sized coal went into individual bins with Christy-type gates on the bottom for gravity loading into rail cars. The slack coal was carried by conveyor belt to two 125-hp Kewanee boilers used for powering the shaking screens, pumps, machine shop, car loader, blacksmith shop and other equipment at the lower portion of the mine's facilities.

Independent Coal & Coke also built, during this first construction period, a 4.5-mile branch rail line from the D&RGW line near Helper to the tipple. Two 25-ton Shay engines hauled railroad cars from the siding to the tipple. Each engine was capable of hauling 2,000 tons. The empty cars were weighed before entering the tipple area by a 100-ton Fairbanks 50-foot scale, and weighed again by another set of Fairbanks scales after they had been loaded by the tipple. The company had enough siding adjacent to the tipple to store 100 cars, and enough at the Kenilworth Junction near Helper for 150 cars.

In addition to the extensive development of mine workings, the company also planned and developed a town on the flats south of the tipple area. By 1910, the company employed 485 men, and it was estimated that the town of Kenilworth contained 750 people.

Mine Development, 1910-1920

During this decade, the Independent Cole & Coke Company continued its capital improvement program for the mine. Much of this improvement effort went toward increasing the efficiency of the operation and reducing the cost of its coal. As part of its original planning for the future, Independent Coal & Coke purchased 101 shares of stock in the Spring Glen Canal Company, which entitled it to 250,000 gallons of Price River water. In addition, the company also bought separate water rights to another 70,000 gallons from the river. In 1911 a third set of 125-hp Kewanee boilers was installed on the company's property near the river. These boilers powered a "triple expansion duplex" Worthington pump with a capacity of 300 gallons per minute, an auxiliary pump with a capacity of 100 gallons per minute and a much smaller pump used to lift the water out of the river into settling ponds. Four miles of 6-inch diameter pipe connected this pumping plant with the mine,, which was 1000 feet higher in elevation. The water was held in a storage reservoir near the tipple and gravity-fed to the town of Kenilworth and pumped up to the water storage tank near the Aberdeen portal (State of Utah 1911).

Development work on the other two seams owned by the company continued at a steady pace during the decade, although neither the Royal Blue nor the Kenilworth were mined as extensively as the Aberdeen. The original shaft connecting the Royal Blue was abandoned in 1913 and a new shaft dug to the sixth right main entry, where the hoist was located for workings deeper into

connected the tram road with the mines. The company purchased a 30-ton Shay locomotive to carry the loaded cars to the tippie. The new opening was outfitted with a variety of electric hoists, mining machinery and a General Electric locomotive to carry coal up the slopes to the mine opening. The hoist which lowered the cars down the incline from the mine to the tram road was installed in a cut-stone building, along with the fan machinery (Independent Coal & Coke Co. 1918).

Mine Development, 1921-1937

Development of the main slopes for the Aberdeen and Kenilworth seams had proceeded to such an extent that by 1920 the farthest workings were now 750 feet below the original Aberdeen No. 1 opening, meaning that mining was taking place underground at exactly the same level as the tippie outside the mine. By 1920, the company had opened and was producing coal from four separate slopes in the Aberdeen and Kenilworth seams, two of which were connected to the original Aberdeen slope and two in the new Bull Hollow opening. The mines were designated:

Original mine opening

Aberdeen No. 1
Kenilworth No. 3

Bull Hollow opening

Aberdeen No. 2
Kenilworth No. 4

In an effort to cut the cost of transporting the coal to the tippie, the company decided to drill two tunnels into the mountain which would intersect the seams on the same level as the tippie outside. The tunnel in Bull Hollow was begun in 1920. Finished in 1921, the tunnel was 3100 feet long and intersected the Aberdeen seam well behind the burned-out area near the surface, and ended in the main slope of the Kenilworth seam.

By 1922, Independent Coal & Coke began a second tunnel into the original mine workings, the No. 1 and No. 3 mines. Excavation on this tunnel was finished in February 1924, and a double-track tram system was then installed along the 8100-foot length. Like the tunnel in Bull Hollow, the second tunnel intersected the Aberdeen seam and ended in the Kenilworth seam. Once these two tunnels were complete, all coal produced from the mine was brought to the surface through them. The original openings, the shelf line, the gravity tram line and other features were no longer used after the tunnels' completion. The original opening was then used primarily for ventilating the mine.

The mine ventilation system was also redone after the completion of the rock tunnels into the seams. At the old Aberdeen No. 1 portal, a 5x11-foot Jeffrey centrifugal fan was installed. At the original opening in Bull Hollow,

a 7x3-foot Jeffrey fan supplemented the Aberdeen portal system. Both fans were designed as exhaust fans. Air entered the mine through the rock tunnels and was drawn upwards through the mine workings and out through the original portals. Together the two fans could circulate approximately 125,000 cubic feet of air per minute.

During the 1921-1937 period, Independent Coal & Coke continued the mechanization of its mining at a steady pace, with almost all hand labor eliminated by 1939. In this respect, Kenilworth mines were well in advance of most other mines in the State of Utah. Mechanization of loading of the coal cut from the face of a working room first took place in 1928, but it was not until 1935 that the pace of mechanization began to expand rapidly. By 1939, 83% of the mine's production was machine-loaded. (At the time, the average for all Utah coal mines was 65%). Kenilworth coal was mined by machine, drilled with power drills, either loaded directly into mine cars with portable loading machines or carried down-slope by conveyors, then carried to the surface by cable and reel locomotives.

The tipple system also underwent radical changes during this period in the mine's history. The company's tipple built in 1917 was torn down and rebuilt in 1926 and rebuilt again in 1931. This last tipple, built by the McNally Pittsburgh Manufacturing Corporation, lasted until the mid-1950s. Loaded cars were dumped into the tipple with a rotary car dump and the coal conveyed to the crusher. From the crusher, the coal moved to a shaking screen, which sized the coal into a variety of saleable sizes; impurities were picked out by hand as the coal passed along the conveyor to the storage bins. A blending conveyor carried the coal from the bins to be loaded into railroad cars. The four sizes of coal could be loaded separately or combined in various proportions.

The Coal Market and the Kenilworth Mine, 1939-1961

After World War I, the coal mining industry went into an economic slump that lasted until 1940. Competition from other forms of energy, such as oil and natural gas, began to erode the mine's market about the same time as an overall slackening in demand occurred because of improved technology for the use of coal.. Independent Coal & Coke responded to this situation by seeking to improve productivity. The new mining machinery installed in 1917 in the Bull Hollow opening heralded four decades of increasing automation. By 1939, the mining and loading of coal was almost completely mechanized in the mine; yet, as the market for coal sagged, the company was forced to abandon the most costly portion of its mine. The Aberdeen seam was closed down in 1937; since that time all coal from the mine has been from the Kenilworth seam.

Few changes were made to the physical plant of the mine during this period, however. Most of the buildings from the 1910-1937 era were simply refitted with new machinery. The next major change in the Kenilworth Mine workings came in December of 1951. The Independent Coal & Coke Company purchased the holdings of the Utah Fuel Company, including the mine at Clear Creek and the

mine and coal washing plant at Castle Gate, directly across the mountain from Kenilworth. At the time, most Kenilworth coal was being hauled around the mountain by rail to Utah Fuel's Castle Gate coal washery (Bernick 1952). A Utah state legislature report in 1935 had urged the consolidation of Carbon County coal companies to reduce the operating costs of Utah coal firms. Independent Coal & Coke now began to realize some of these reduced costs with the new acquisitions.

The 1950s were a period of transition for the company. Many of the old markets in home heating and cooking were being lost, but new markets in the generation of electricity were being created. In 1954, and again in 1957, Utah Power & Light decided to build generating facilities adjacent to the Castle Gate Mine (Bernick 1954, 1957). This insured a small but steady market for the company's coal. In 1958 Independent Coal & Coke made a major decision which affected the Kenilworth Mine workings. The company decided to build a 5000-foot tunnel from the old Aberdeen rock tunnel to the main slope of the Castle Gate mine. Kenilworth coal could now be gravity-fed to the Castle Gate mine and washery, thereby eliminating the costs of hauling the coal around the mountain to be washed. The tunnel was constructed in 1959-60 and, later in 1960, the old Kenilworth surface workings were abandoned (Bernick 1961). Only the hoist in the Aberdeen slope was kept in working condition for a few years to lower tram cars down toward the new tunnel. Since its abandonment in 1960, the surface workings of the Independent Coal & Coke Company at Kenilworth have been gradually destroyed. The tibble, tram line, machine shop and other facilities are gone. Only the washhouse, a portion of the power system and various utilitarian buildings remained in the 1980s.

In 1983, however, the U. S. Office of Surface Mining (OSM) and the Utah Division of Oil, Gas and Mining (DOGM) decided that the remaining historic surface workings of the Independent Coal & Coke Company's Kenilworth Mine should be reclaimed because the existing structures posed a health and safety risk to local residents of Kenilworth. Under the Surface Mining Control and Reclamation Act of 1977, the two agencies authorized the destruction of these buildings. As part of the regulatory process prior to the demolition,, the OSM and DOGM undertook a HAER documentation effort in order to preserve as much of the historical value as possible for future research.

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APPENDIX I

Inventory of Independent Coal & Coke Company - 1920

MACHINERY

Description	Location
1 Dillon-Box double drum hoist with 400 HP G.E. 2200-volt induction motor and magnetic control	Main slope #1 opening
1 Dillon-Box single drum hoist with 200 HP G.E. 2200-volt induction motor, magnetic control, geared for two speeds	Shelf road
1 Ottumwa 12" by 14" steam hoist	Tipple, for unloading material
1 Fairbanks-Morse single drum hoist with 15 HP Westinghouse 220-volt motor	Sinking slope #2 opening
1 Dillon-Box double gravity drum, 25 tons capacity	Top of #1 incline
1 Fairbanks-Morse steam hoist, converted to electric drive, with 20 HP G.E. 220-volt induction motor	Royal Blue #1 opening
1 Denver Engineering Works single drum hoist, with 150 HP G.E. 2200-volt motor, with contactor control immersed in oil	Kenilworth slope #1 opening
1 Denver Engineering Works single drum hoist, with 325 HP G.E. 2200-volt motor, motor contactor control	Incline #2 opening
1 Hendrie & Bolthoff single drum hoist geared to 75 HP G.E. 220-volt induction motor	Kenilworth panel #2 opening

Description	Location
1 Gates Mfg. Co. single drum hoist geared to 50 HP G.E. volt induction motor	Aberdeen panel #2 opening
1 Hendrie & Bolthoff steam hoist, single drum, rebuilt for use as steam engine	Driving shaking screens
3 72" x 16' Kewanee horizontal return tubular boilers	Power house at tipple
2 72" x 16' Kewanee horizontal return tubular boilers	Pumping plant
3 9" American automatic stokers	Power house
2 9" American automatic stokers	Not in use
1 Steel conveyor for slack, 210 ft.	Tipple to power house
3 Steel hoppers for slack over boilers, 10 tons capacity each	Power house
3 Steel hoppers for slack over boilers, 10 tons capacity each	Power house, not in service
2 8-1/2" x 5" x 10" Union Plunger Pumps, for boiler feed	Power house
2 12" x 3" x 12" Janesville duplex plunger pumps, high duty, for pumping water to mine	Power house
1 10" x 16" x 25" x 5-1/2" x 18" Worthington duplex triple expansion steam pump, high duty	Pumping plant
1 12" x 5" x 18" Worthington duplex plunger pump, high duty	Pumping plant
1 9" x 12" x 10" Worthington duplex tank pump, low duty	Pumping plant
1 4-1/2" x 2-3/4" x 4" Worthington plunger pump, for boiler feed	Pumping plant
1 6" x 9" x 10" Blake single jet condenser with pump	Pumping plant

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Decsription	Location
1 3" Gould centrifugal pump	Not in service
1 3-1/2" Worthington centrifugal pump	Main slope #1 opening
1 9" x 10" Dean vertical triplex plunger pump, belted to 75 HP G.E. 440 volt induction motor	10th right entry #1 opening
1 4" x 6" Dean vertical triplex plunger pump, direct connected to 5 HP G.E. 220 volt induction motor	Aberdeen slope #2 opening
1 850 HP Cochran feed-water heater	Power house
1 150 HP Cochran feed-water heater	Pumping plant
1 5' x 16' Eagle Iron Works fan, driven through silent chain by 50 HP G.E. 2200 volt variable speed motor	Return aircourse #1 opening
3 6' Stine booster fans, belted to 20 HP G.E. 220 volt motors	Aberdeen seam #1 opening
1 7' Jeffrey booster fan, belted to 50 HP Fairbanks-Morse 220 volt induction motor	Kenilworth seam #2 opening
1 8-1/2" x 12 Climax steam engine	Machine shop
1 8" x 10" Nagle horizontal steam engine, driving stokers	Power house
1 10" x 12" Atlas horizontal steam engine, driving conveyor	Power house
1 3 HP G.E. 220 volt induction motor, driving picking table	Tipple
1 15 HP G.E. 220 volt induction motor, driving dump and car haul	Tipple
1 2 HP G.E. 220 volt induction motor, driving forge blower	Blacksmith shop #1 opening

Description	Location
1 10 HP G.E. 220 volt induction motor, driving forge blower and saw	Car repair shop, tippie
1 3000 ton steel tippie & shakers	Tippie
1 Ottumwa-Ecks electric belt conveyor box-car loader	Tippie
1 Ottumwa steam pusher type box-car loader	Tippie
1 40" x 10' Air Receiver	Not in Service
1 36" x 8' Air Receiver	Not in service
3 50" x 12" Air Receivers	Not in service
50 3-1/2-ton Mine Cars, with Duncan solid bearing wheels	No. 2 opening
200 3-1/2-ton Mine Cars, with Watt roller-bearing wheels	All openings
150 3-1/2-ton Mine Cars, with Whitney roller-bearing wheels	All openings
1 Jeffrey electric short-wall coal undercutting machine	No. 1 opening
5 Sullivan electric short-wall coal undercutting machines	No. 1 opening
2 Sullivan electric short-wall coal undercutting machines	No. 2 opening
1 50 KW G.E. Motorgenerator set	Kenilworth seam #1 opening
1 100 KW G.E. Motorgenerator set	Aberdeen seam #1 opening
1 100 KW G.E. Motorgenerator set	No. 2 openings
1 5-ton G.E. electric locomotive	Kenilworth seam #2 openings
1 16" x 18" x 11" x 16" Sullivan steam air compressor	No. 1 opening

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Description	Location
6 Sullivan air punching machines	No. 1 opening
1 8" stone crusher, belt driven	Portable
1 350# Bement-Miles steam hammer	Machine Shop
1 #3 Quincy belt driven hack saw	Machine shop
1 8" Barnes drill, belt driven	Machine shop
1 8" Barnes port drill	Blacksmith shop #1 opening
1 24" American lathe, belt driven	Machine shop
1 12" Champion lathe, belt driven	Machine shop
1 21" American shaper, belt driven	Machine shop
1 1/4" to 2" Wiley & Russell pipe threading machine, belt driven	Machine shop
1 1-1/2" to 6" Victor pipe threa- der, belt driven	Machine shop
1 "Yankee" drill grinder, belt driven	Machine shop
1 Hampton emery grinder and stand, belt driven	Machine shop
1 3" x 30" grind stone, belt driven	Machine shop
1 Iron saw table, with 14" saws, belt driven	Car repair shop
2 Chicago Pneumatic Tool Company's Drills	Car repair shop
1 Chicago Pneumatic Hammer	Machine shop
1 Willey Electric Drill	Machine shop
1 Vulcan Oxyacetylene Welding Torch	Machine shop
1 Acetylene Generating Apparatus	Machine shop
1 6" Keufel & Esser Transit	Mine office

<u>Description</u>	<u>Location</u>
1 4-1/2" Buff & Buff light mountain transit	Mine office
1 18" Keufel & Esser "Y" level	Mine office
1 Pike Model Burrows adding machine	Mine office
1 Monarch typewriter with tabulator	Mine office
1 70-ton Shay locomotive	Railroad
2 90-ton Shay locomotives	Railroad

the Aberdeen seam itself. As the Kenilworth seam was further developed, however, the company decided it was not economically feasible to mine the Royal Blue seam. A second tunnel was also connected to the sixth entry from the Kenilworth seam, and a main slope was dug as a prelude to extensive development (State of Utah 1913). As the Kenilworth seam was further developed, however, the company decided it was not economically feasible to mine the Royal Blue seam. Mining in the Royal Blue seam was discontinued in 1914.

As haulage distances increased, however, the demand for power increased substantially. In 1913 Independent Coal & Coke decided to switch its entire operation to electricity. The two Kewanee boilers near the Aberdeen portal and the two used for the pumping plant was transferred to an enlarged powerhouse near the tippie. The six boilers were then used to produce electricity for the mine. The boilers were equipped with mechanical stokers and a bigger conveyor to bring slack from the tippie. A General Electric 500 KW generator that produced 2300 volts was installed. Most of the steam-driven hoists were now replaced and refitted to run on electricity. A 400-hp motor replaced the Ottumwa steam hoist on the Aberdeen's main slope, and the shelf hoist was converted to a two-speed electric hoist. Six electric undercutting machines replaced the compressor-driven Sullivan drills, and a set of direct current motor/generators was purchased for the machines. Electricity also brought improved safety to detonating charges in the mine. An electric "shot firing system" now allowed miners to detonate their charges from outside the mine (Independent Coal & Coke Co. 1918).

Demands for power continued to increase quickly, and the original generating equipment was soon too small to power the mine. In 1917 Independent Coal & Coke began negotiating for an additional generator, but World War I had driven the price of machinery to a level beyond what the mine could afford. In July, the company decided to purchase its power from the Utah Power and Light Company. The existing generator was sold during the war for a much higher price than the mine originally paid. Three of the six boilers were disposed of as well, three being retained to power what few pieces of equipment it was still easier to run by steam.

Independent Coal & Coke also decided to replace its old wood-frame tippie with a steel-frame one. The new tippie was designed so that four grades of coal could be loaded simultaneously. A rescreening plant was added to this new tippie as well. It was designed to separate the slack from the fine coal dust. The slack was now sold and the dust conveyed to the company's boilers.

During the 1915-1918 period also, the company decided to open a second entrance into the Aberdeen and Kenilworth seams. The old Stowell workings in Bull Hollow were completed revamped. The first several hundred feet of the Aberdeen seam in Bull Hollow had been burned, so the company decided to open the Kenilworth seam in this location and connect to the Aberdeen seam further into the mountain. A tram road from the tippie was built almost a mile around the mountain to Bull Hollow, and a steep grade to the mouth of the new opening

Source: Paul Weir
Mining Engineer
Chicago

APPENDIX II

KENILWORTH MINE ANNUAL PRODUCTION

NATIONAL, STATE OF UTAH, AND INDEPENDENT COAL & COKE COMPANY

Year	<u>Amount (1000s of tons)</u>			<u>Percent</u>		
	National	Utah	IC&C	Utah of National	IC&C of Utah	IC&C of National
1908	332,574	1,847	113	0.555	6.12	0.034
1909	379,744	2,267	228	0.597	10.06	0.060
1910	417,111	2,518	296	0.604	11.76	0.071
1911	405,907	2,513	347	0.619	13.81	0.085
1912	450,105	2,807	400	0.624	14.25	0.089
1913	478,435	3,255	412	0.680	12.66	0.086
1914	422,704	3,103	320	0.734	10.31	0.076
1915	442,624	3,109	237	0.702	7.62	0.054
1916	502,520	3,567	273	0.710	7.65	0.054
1917	551,791	4,125	330	0.748	8.00	0.060
1918	579,386	5,137	342	0.887	6.66	0.059
1919	465,860	4,631	345	0.995	7.45	0.074
1920	568,667	6,005	473	1.056	7.88	0.083
1921	415,922	4,079	308	0.981	7.55	0.074
1922	422,268	4,992	419	1.182	8.39	0.099
1923	564,565	4,720	397	0.836	8.41	0.070
1924	483,687	4,488	382	0.928	8.51	0.079
1925	520,053	4,690	424	0.902	9.04	0.082
1926	573,367	4,374	422	0.763	9.65	0.074
1927	517,763	4,781	477	0.923	9.98	0.092
1928	500,745	4,843	541	0.967	11.17	0.108
1929	534,989	5,161	560	0.965	10.85	0.105
1930	467,526	4,258	523	0.911	12.28	0.112
1931	382,089	3,350	405	0.877	12.09	0.106
1932	309,710	2,852	332	0.921	11.64	0.107
1933	333,631	2,675	268	0.802	10.02	0.080
1934	359,368	2,406	250	0.669	10.39	0.070
1935	372,373	2,947	308	0.791	10.45	0.083
1936	439,088	3,247	351	0.739	10.81	0.080
1937	445,531	3,810	431	0.855	11.31	0.097
1938	348,545	2,947	407	0.846	13.81	0.117
1939	394,855	3,285	473	0.832	14.40	0.120

HISTORIC AMERICAN ENGINEERING RECORD

HAER NO. Ut-31

(Page 20)

<u>Year</u>	<u>Amount (1000s of tons)</u>			<u>Percent</u>		
	<u>National</u>	<u>Utah</u>	<u>IC&C</u>	<u>Utah of National</u>	<u>IC&C of Utah</u>	<u>IC&C of National</u>
1940	460,772	3,576	501	0.776	14.01	0.109
1941	514,149	4,077	588	0.793	14.42	0.114
1942	582,693	5,517	916	0.947	16.60	0.157
1943	591,770	6,666	964	1.126	14.46	0.163
1944	581,220	7,120	1,016	1.225	14.26	0.175

DESCRIPTIONS OF SITES
AT THE INDEPENDENT COAL & COKE COMPANY
MINE IN KENILWORTH, UTAH

General Information

I. Sources

The material used to prepare the following site descriptions was taken from the following sources:

1. Notes and dimensions taken by Allen D. Roberts during on-site investigation conducted August 13-14, 1983.
2. Photographs taken on-site by David Merrill on August 13-14, 1983.
3. Old blueprint map entitled "Townsite Map, Independent Coal & Coke Co., Kenilworth, Utah. Scale: 100 ft = 1 in." (in possession of Allen D. Roberts).
4. Topographical maps entitled "Pre-reclamation sampling and photographic locations, Mine Land Reclamation, Kenilworth Coal Mine," prepared for the Utah Department of Natural Resources, Division of Oil, Gas and Mining, Salt Lake City, Utah. Drawn July 21, 1983, D'Appolonia Consulting Engineers, Inc.
5. Partial set of site descriptions prepared and typed for the Utah Department of Natural Resources, Division of Oil, Gas and Mining, Salt Lake City, Utah.
6. Nine sheets of measured architectural site plans and individual site drawings prepared during the month of October 1983 by Allen D. Roberts.

Readers of the descriptions should refer to the photographs and to the above-mentioned materials, especially to the architectural drawings, which contain detailed notes and dimensions, for further information.

II. Format

Each of the 33 sites has been described using a four-step process as follows:

- A. Probable use (or name)
- B. Construction materials

C. Size (dimensions)

D. Additional information

Site Descriptions

Site #1

A. Possibly a water reservoir, storage tank or cistern.

B. Stone walls, wood plank top; metal pressure-fitting bands are extant and may have been cinched around a wooden tank (no longer extant).

C. Eighteen feet in diameter.

D. A round structure, the top of which is nearly level with the surrounding grade. Debris piled on the top includes metal bands, fallen rocks, cut wood plank and metal pipe. The feature is a ruin.

Site #2

A. Possibly a ventilation wheel house, most likely the oldest of the two buildings on the upper site that seem to have had that function (the other being Site #3 to the north).

B. Cut, mortared stone super-structure which seems to have once had a wooden roof. Walls to the south, perpendicular to the opening, are of roughly-hewn mortared stone. Inside the building are a metal fan wheel and metal gear wheels mounted on a concrete platform.

C. Main building and assorted stone walls are about 40 feet across the front and 19 feet wide across the north, with a 40-foot long retaining wall across the south. The metal fan wheel is 5 feet wide by 16 feet in diameter and has curved blades, each of which is 3' 6" deep. A metal electrical tower approximately eight feet square at the base sits atop the stone walls of the easternmost structure containing the gear wheels.

D. Very interesting site, but in a state of near ruin. Faces a steep cliff to the east. May have been abandoned when the newer fan house was constructed of metal to the north. Perhaps Site #2 provided ventilation for the mine shaft adjacent to it at the south hole. Site #3 vented the shaft it is connected to via an air tunnel to the north.

Site #3

A. Ventilation fan house, based on the equipment.

B. Consists of two connected structures - a metal building of 1/8 panels riveted to 4 x 4 x 1/4" angle irons and containing a metal fan wheel and exhaust "duct," and the adjoining cut-stone air tunnel with its sloping dirt floor and concrete roof.

C. Metal building is about 30 x 36 feet in size, with the tunnel being 13 feet wide and about 24 feet in length from south to north, where it terminates in the mouth of a large mining shaft.

D. The metal building contains electrical equipment, geared wheels and related belts, a generator and other power-generating machinery. In the western of the structure's two rooms is a metal fan wheel 5' 6" wide by 11' 0" in diameter. In the north and above the wheel is a large exhaust "duct" made of metal panels.

Site #4

A. Use unknown to this writer but, given the largest gear wheels extant, and the position of the building with respect to the canyon at the south, it is surmised that the building may have been associated with hoisting operations.

B. Wood 2 x 4" stud frame super-structure, once with a gabled roof (now fallen) covered with corrugated metal sheathing. Inside are large metal gear and pulley wheels on concrete mountings.

C. Building size roughly 20 x 32 feet (structure is collapsed and covered with debris, so it is difficult to measure exactly).

D. The roof and most of the walls have collapsed, but the cog and belt wheels, brakes, switches etc. are intact. The south wall of the building is a stone wall north of the the north wall of the air tunnel. Between these two stone walls is a new door opening leading into the mine shaft.

Site #5

A. Use unknown by this writer.

B. Concrete slab building floor with parts of mortared stone foundation walls intact, along with portions of concrete pads and platforms, perhaps for machinery no longer extant.

C. The visible dimensions of the site (part of it is buried

beneath earth) is roughly 20 x 55 feet.

D. The site is roughly in alignment (lengthwise, north to south) with features built in the canyon to the south. Conjecture is that the building may have been associated with hoisting operations.

Site #6

As noted on architectural drawing sheet four, there are no particular physical features associated with this site.

Site #7

A. Use unverified by this writer, but the nature and location of the feature suggests it may have been part of a hoisting apparatus.

B. Metal and wood drum- or cylinder-shaped object with spoked metal "wheels" at each end and in the middle, sitting half-buried in a low, flat-roofed natural cave. South of the west edge of the object is a small cut-stone wall. West of the object is a pool of water with some small man-made equipment, the function of which is not yet apparent.

C. The cylinder is 10 feet in diameter and 13 feet long.

D. The northernmost of several features at the middle site, if a line were drawn perpendicular to the length of the cylinder, it would run roughly parallel to the metal trackage on the bridge, again suggesting some relationship to the hoisting operation.

Site #8

A. Not a building, but a group of pulley wheels attached to wooden frames, likely associated with a car-hoisting function.

B. Heavy wooden timber frames support the metal pulley wheels.

C. Each pulley wheel is 4" wide by 4' 6" in diameter. The original size and configuration of the frames is unknown, due to their altered and deteriorated condition.

D. It was at first assumed by this writer that the pulley wheel originally stood upright, or in a vertical position, and that the supporting frames had fallen over. It may be, however, that

the wheels were actually always horizontal to the ground, much as they are now.

Site #9

A. A bridge supporting railroad trackage.

B. Bridge supports are heavy timber "A"-frames with cross-bracing and cantilevered beams which directly support the planking of the bridge floor or top. The trackage is 3"-wide metal rail.

C. The wood-topped portion of the bridge is about 88' 9" long by 16' wide.

D. The bridge floor consists of 2"-wide wood planks. Much of the stone retaining wall to the west has fallen into the canyon, but the bridge stands because it was apparently built to be free-standing and independent of the stone wall. The bridge is in very poor condition, and appears unsafe for carrying heavy loads.

Site #10

A. Switching/control platform, based on extant equipment.

B. Wooden platform supported by 8" posts or stilts, allowing the platform to rest suspended over the stone-retained wall west of the railroad bridge.

C. Platform is 12' 6" wide by 16' 4" long, the length running parallel to and 4' 6" west of the center of the trackage.

D. Platform has wood plank floor which is tipping off to the northwest. Mounted on the floor is a metal switching lever and a metal wheel with handles, much like those used to steer boats.

Site #11

A. Middle hoisting site - consists of several related but separate features including cable pulleys and the "A"-frame end of a fallen timber frame.

B. The three pulley wheels are metal, while the "A"-frame is made of heavy wooden timber, its members bolted together.

C. The pulley due east of the switching platform and located in the center of the two car rails or tracks is 8" wide by 20" in diameter. Directly south of this pulley 10' 4" is a larger one, 4"

wide by 4' 6" is diameter (like those in Site #8). Due east of this wheel and south of the fallen frame is another 4" by 4' 6".

D. Other boards, small switches etc. are strewn over the entire middle site. Just south of Site #11 the railroad trackage descends a steep hillside leading to the lower site.

Site #12

A. Water aqueduct/mine portal (really two nearby but separate features with separate uses).

B. Water aqueduct is a reinforced concrete structure. The portal is a hole cut into the side of the cliff. The opening is closed off by a metal and wood fence and gate.

C. Aqueduct is 10 feet wide by about 61 feet long in plan, beyond which is a smaller 19'-long concrete splash pad perhaps 15' above grade. Concrete walls of the bridge aqueduct are four feet high and 10" wide. Supporting the structure are concrete columns, each 1' 4" square. Portal opening is 4" 7" high by 15 feet wide.

D. Water pours off the top of a cliff north of the aqueduct and onto the flat splash pad, then down the sloping floor (15 degree slope), dumping into a ravine to the southwest. Small amount of water flows across floor of portal, inside to outside.

Site #13

A. Stone building and water channel, use undetermined.

B. Cut and mortared sandstone block walls 18" thick, with 8" thick concrete roof. Water channel is stone and concrete block with a bridge of metal beam and railroad ties.

C. Inside dimensions 15' 3" wide by 30' 0", with small room about six feet square at the southwest corner.

D. Situated at base of a 35-foot cliff. Most of concrete wall has collapsed, probably from landslides. Much of interior now filled with earth and stone. Channel conveys water from splash trough at base of cliff southwest to a ravine.

Site #14

A. Dynamo building and drainage channel.

B. Poured concrete floor, walls, flat roof and dynamo platform. Water channel of cut and mortared sandstone blocks. Bridge of metal beams and wood railroad ties.

C. Building 18 x 21 feet. Concrete walls 10-1/2" thick, floor 4" thick, roof 8" thick. Remains of metal dynamo frame on concrete platform 4' x 11' 1". Channel is 11' wide, about 8' deep and 60 feet long. Bridge beams composite, made of two channels bolted back-to-back, on top of which are a few remaining 8' railroad ties.

Site #15

A. Car dumper, called by others a "hoist."

B. Metal frame, cylindrical drum and gears on concrete floor.

C. Drum 9' 0" x 11' 8" long

D. Back wall of dumper frame of metal "I"-beam and curved metal plate wall. Motor, gearing and related section of railroad track intact. Drum apparently accepted cars of ore and rotated them, emptying their contents to the northwest. To northwest is steep 40' drop-off to pit below.

Site #16

A. Electrical power tower.

B. Open metal frame set in four concrete fans.

C. Frame of four 5 x 3 angles with 3-1/2 angles for bracing. Four concrete fan bases, each 16 x 16" at top, tapering to 24" square at grade. Frame 7' 3" by 8' 1" in plan and 19' high.

D. Wires and insulators intact.

Site 17

A. Identified on old townsite map as "Cap HO", otherwise known as blasting cap storage building.

B. Hollow clay block walls on concrete floor; concrete floor and gabled roof; metal door with wood backing.

C. Building is 12' 4" square outside, 11' square inside. Floor-to-ceiling varies from 6' 6-1/2" to 8' 3-1/2".

D. Small newer window roughly cut into west wall. Water culvert due south of building.

Site #18

A. Dynamo and storage building.

B. Squared cut and mortared sandstone block walls, concrete roof (flat at center, sloped at two sides), metal door with wood backing, concrete floor.

C. 6' 10" floor to ceiling at center. Building is 14' 0" square outside, 11' 0" square inside.

D. Roof vented through metal pipe on east end of building. Built into hillside.

Site #19

A. Identified on old townsite map as "218 Switch Cabin."

B. Walls of hollow clay block on concrete floor. Electric power frame over building. Made of angle irons. Hipped roof with corrugated metal panels.

C. Building is 16' square. Metal frame above set in concrete foundation and made of bolted 3 x 4, 3 x 3 and angle irons. Frame's four legs are 19' apart, in a square, and 20' high.

D. Double-hung wood-sash windows; nine switching panels in a row in the center of the room; three additional switches at the southwest corner; "Spring Glen pump" at southeast corner; concrete floor in the depressed pit parallel to north wall of building. Building sits on stone-walled concrete-floored platform.

Site #20

A. Identified on old townsite map as "217 Lamp House, 223, 254" and "generator."

B. Three concrete fans on one concrete slab about 160' long and between 20 and 31' wide.

C. See B above. The platform is elevated about three or four feet above grade on south; inside the foundations are concrete pads of various sizes.

D. From debris and fans it is clear that original building walls were made of 8 x 8 x 16" hollow clay blocks. Platform slab is at same grade on north side.

Site #21

A. Transformers/substation.

B. Cut, mortared and sandstone block walls with some concrete walls; metal frame; newer metal chain-lock fence.

C. Rectangular perimeter 27' 7" x 58' 0" with four intermediate tiers at various distances apart. Stone walls are 18" thick, two metal frames 20' long by 10' wide by 40" high.

D. Contains three General Electric 500 KV transformers, each 4' 0" x 8' high and insulators. Some tiers (upper ones) are abandoned and empty. Contains tall wooden power pole.

Site #22

A. Called a "guard shack" by previous investigators. The small building seems likely to have served as some sort of control or switching station.

B. Made of red hollow clay blocks, each 8 x 12 x 12", with a vented concrete floor and roof.

C. Building is 7' 6" square with an 8' high ceiling.

D. Metal frame exists to north and east. Inside is an electrical circuit breaker and a levered switch. Situated on the edge of a steep hill.

Site #23

A. Perhaps the "machine shop" foundation identified as such in this location and approximate configuration on the old Kenilworth townsite map.

B. Concrete slab with no foundation walls extant.

C. Extant slab is roughly rectangular, about 80' wide by 115" long. The size and shape of the slab, shown on architectural drawing sheet six, is based on the building "footprint" shown on the old townsite map.

D. Debris near the site includes metal track, wood pieces, concrete rubble, metal pieces such as cable and gears, all apparently discarded and graded over.

Site #24

A. Aerial tippie.

B. Concrete foundations, metal "I" columns with round wood posts, corrugated metal siding on walls; roof of room supported by columns.

C. Second story room about 12' x 16' 6", foundations 3 x 4'; "I" columns 4' 2" x 10', wide flange type; wood posts 10' 6".

D. Large openings in east and west walls of upper room; chute hangs from east opening over 50'-deep pit. Conveyor 2' 4" wide rubber and canvas belt. Various pipe and debris extends in a line east of structure.

Site #25

A. Electric power tower.

B. Metal frame made of four bolted 3" angle-iron legs at corners with 2" angle irons bracing and set in concrete floor pads. Wood plank floor.

C. Rectangular in plan, 5' 1" x 8' 1"; floor is 6' 3" above grade; top of tower is 13' 10" above floor; footings are 18" square.

D. Current box and insulators intact.

Site #26

A. Known as "Bath House 212" and as "Shower/Locker Room Building."

B. Original building of cut and mortared sandstone block with concrete floor and metal open-web trussed roof sheathed with corrugated metal panels. Additions to west are of cinder block; addition to north is of concrete block, with east entry vestibule of wood frame construction.

C. Main stone building is 32' 6" x 65' 0". North addition is 13 x 87 feet. Upper west addition is 32' 6" x 21' 6"; lower west

addition is 16' 6" x 17' 6". East vestibule is about 5 x 6 feet. A basement room has interior dimensions of 19' 8" x 29' 0" and sits under the larger west addition. Ceiling heights average 8' tall, but the ridge of the gabled main building is over 20 feet high.

D. Roof has large metal vents. Some plumbing fixtures and piping intact. Much of roofing and other salvageable items have been removed. Stone retaining walls exist south of the building.

Site #27

A. Stone retaining walls.

B. Cut, mortared and coursed sandstone block.

C. About 100 feet long, 18-24" thick and over 20 feet tall along its longest straight length.

D. Walls runs east to west, but it curves to north at west end, and a retaining wing wall or buttress runs due south from the east end. Deteriorated 20 x 30-foot foundation slab located east of wall.

Site #28

A. Called "Load-out Bin" by previous investigators.

B. Reinforced concrete walls, buttresses or piers and floors. South wall is of cut and mortared stone.

C. The structure is 46' wide by 50' long, varies in height up to about 30' along the north wall (contains floors at several different levels). Walls 12" thick with 2 x 3-foot piers.

D. A metal electrical frame, truncated "I"-beam columns and concrete bases for missing machinery are extant. No roof now, but beam pockets along top of east and west walls indicate there was once a roof or exterior floor. West of this site is a metal wall about 8' high and about 100' long, sitting at the crest of the hill sloping to the south.

Site #29

A. Use unknown to this writer, but looks like a building foundation or platform with a retaining wall.

B. Concrete slab with concrete retaining wall and concrete

buttresses. Stepped wall at the east end of the slab is of concrete block.

C. Platform is 12 feet wide by 65 feet long, with a wall at the north averaging four feet in height.

D. Debris piled on and around slab consists of wood, pipes, cinder blocks and broken concrete.

Site #30

A. The tipple yard.

B. Concrete slabs, footings and foundation pads and walls, probably steel reinforced.

C. Individual concrete features are of various sizes and shapes, a typical concrete pad being 3 x 3 feet square by 18" high above grade. The yard containing foundations is roughly 180 feet square.

D. While many features are intact on site, many others have been moved about, making it somewhat difficult to reconstruct exactly how the tipple structure(s) may have been configured. It is clear, however, that the east part of the tipple structure is related to (lines up with) the load-out bin to the north. In the hillside south of the tipple yard are large concrete pipes protruding southward from the hill.

Site #31

A. Identified on old townsite map as "Carpenter Shop", more recently used as a garage and storage building and perhaps mechanic or welding shop.

B. Wood frame super-structure, some parts sheathed with horizontal board and batten, other parts with corrugated metal panels; addition to south is of cinder block; roof covered with both metals and tarred felts.

C. Rectangular central gabled building is 20' 6" x 50' 6". Due north is shed-roofed extension 15' 0" x 50' 6". North of that is a shed-roofed extension 20' 6" square. The south addition is 14' 1" x 31' 4". Central gable is 20' high at ridge.

D. Windows are of irregular sizes, shapes and types. Wood plank flooring, few interior partitions. Pipe storage racks and other material and debris are inside or surround the building.